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PHENOMENAL CONSCIOUSNESS AND COGNITIVE ACCESS

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INTRODUCTION

Consciousness is one of the most debated topics of the last decades. Human beings perform many activities throughout the day; some of them imply conscious states, while others do not. Conscious states are those states by which subjects are aware of something. How could we know whether individuals are aware of something? We usually rely on reports to know whether one is in a conscious state. When individuals report their experiences about something in particular, for example, their visual experience of a flower in a garden, we infer that they were conscious of that flower; otherwise they would not have been able to report about their visual experience. Nevertheless, it is not always easy to distinguish between conscious and unconscious states. Are those subjects also conscious of the rest of the elements that surround that flower? We receive plenty of sensory information in a given time, how could we distinguish between conscious and unconscious sensory information? In some cases, individuals do not have the ability to report. How would we know whether they are conscious of sensory stimuli? In order to give an answer to these questions, we have to find out what is the nature of consciousness. That is, to put it in terms familiar to philosophers, to answer the question: what are the necessary and sufficient conditions of consciousness?

In this dissertation, I will explore what are the necessary and sufficient conditions for being conscious of sensory mental states, that is, those mental states that a subject undergoes when perceiving information from the external world. Some scholars argue that the neural machinery involved in the cognitive accessibility that underlies reportability is a constitutive condition for being conscious of a sensory mental state. In other words, subjects cannot be aware of their sensory mental states, unless those sensory mental states have been cognitively accessed. Those who assert this assumption are known as advocates of a stance called metaphysical correlationism. On the other hand, other scholars have replied that cognitive accessibility is not a constitutive condition for being conscious of a sensory mental state. This

means that subjects could be conscious of their sensory mental states without having cognitive access to them (Block, 2007, 2008).

The main advocate of this last stance is Block. He suggests that there are two systems of consciousness: phenomenal consciousness and cognitive consciousness. On the one hand, phenomenal consciousness is that state by which subjects are aware of something through sensations. On the other hand, cognitive consciousness is that state by which subjects are aware of something through cognitive abilities. If individuals can report their sensory experiences it is because the information has been accessed by the cognitive system. However, Block argues that subjects could be phenomenally conscious of a sensory mental state without being cognitively conscious of that sensory mental state. That is so, since phenomenal consciousness overflows cognitive accessibility (Block, 2007:487). According to Block, the phenomenal system differs from the cognitive system (Block, 2007). Thus, although both systems usually work together when individuals are conscious of their sensory mental states, it is possible that one of the two conscious systems occurs without the other.

Those advocates of metaphysical correlationism suggest that cognitive access is a constitutive condition of consciousness, there is no difference between phenomenal consciousness and cognitive consciousness, since to be phenomenally conscious of a sensory mental state, subjects must have cognitive access to that sensory mental state. They argue that there are not two different systems of consciousness as Block postulates.

The aim of this dissertation is to explore whether cognitive access is a constitutive condition for being conscious of a sensory mental state. For this, I will investigate whether Block's thesis – phenomenal consciousness overflows cognitive accessibility – is true.

The dissertation is divided in three main sections: 1. An analysis of consciousness, phenomenology and cognitive access: theories and concepts. 2. Empirical evidence that supports Block's stance. 3. New empirical evidence and arguments for Block's thesis.

In the first section, I will analyse three main postures about consciousness: metaphysical correlationism, epistemic correlationism and Block's stance. Metaphysical correlationism claims that phenomenal consciousness and cognitive accessibility go hand in hand. There cannot be one without the other. As we will see, this stance could be divided into different attitudes: high-order thought theories of consciousness (Rosenthal, 1986, 2005), high-order perception theories of consciousness (Lycan, 1996), and intermediate-level representations theories of consciousness (Prinz, 2000). Epistemic correlationism asserts that it is possible that phenomenal consciousness overflows cognitive accessibility, but this assumption is not empirically testable (Putnam, 1981; Chalmers 1998). Block's stance claims that it is possible to be conscious of a mental state without having cognitive access to that mental state, since phenomenal consciousness and cognitive accessibility are two different systems. He also suggests that we can demonstrate it empirically (Block, 2008:487).

After analysing these three main stances, I will examine three concepts which play an important role concerning the nature of consciousness. Firstly, I will tackle the concept of sensory mental state. What are the content and phenomenology of sensory mental states? What are the necessary and sufficient conditions of sensory mental states? Secondly, I will explore working memory. Does phenomenal consciousness take place in the working memory system? Does phenomenal memory capacity depend on working memory capacity? Thirdly, I will analyse the concept of attention. I will distinguish between top-down endogenous attention and bottom-up exogenous attention (Koch & Tsuchiya, 2006). The main question concerning attention is whether it is a cognitive ability required for phenomenal consciousness (Block, 2013; Stazicker, 2011).

In the second section, I will analyse whether Block's stance is plausible. For this, I will explore different phenomena that Block suggests as empirical evidence to support his thesis:

1. Change blindness. It is a phenomenon that occurs when subjects fail to detect changes in their visual environment. On the one hand, some scholars have argued that this phenomenon corroborates that the content of our phenomenal experience is sparse. We suffer from the illusion of seeing the whole scene in front of our eyes, when in fact, we actually see very little of our visual environment (O'Regan & Noë, 2001; Noë, 2004; Simons & Ambinder, 2005; Dehaene et al., 2006). This assumption lies in the fact that subjects cannot report the changes produced in their environment. In addition, they claim that this phenomenon suggests that attention is a constitutive condition for phenomenal consciousness. On the other hand, Block and Dretske argue that this phenomenon does not show that our visual experiences are sparse, but rather that people see objects without noticing the change (Block, 2007, 2008; Dretske, 2004, 2006). As we will see, this suggestion is supported by the difference between perceiving objects and facts (Dretske, 2004).
2. The Sperling and Landman et al. experiments. Block uses these psychological experiments to demonstrate that phenomenal consciousness overflows cognitive accessibility (Block, 2007, 2008, 2013). The Sperling experiment (1960) shows an array of letters for half a second. The subjects have to state what they have seen. They state that they could see all letters, but they cannot report more than approximately four specific letters. The Landman et al. experiment (2003) shows a circle of rectangles for a half a second. The subjects claim that they could see all the rectangles, but they cannot report the specific orientation of each of them. Block argues that the subjects are phenomenal conscious of all or almost all the specific items of the experiments, but they are not able to identify all of them because they do

not have cognitive access to all of them. According to Block, iconic memory represents phenomenal consciousness capacity, while working memory represents cognitive access capacity (Block, 2007).

3. Special brain conditions: split brain, unilateral neglect and blindsight. I will explore the perceptual deficits that some patients might have due to cerebral lesions. Several experiments have showed that some patients, who are cortical blind due to lesions in the primary visual cortex, are capable to respond to visual stimuli without being cognitively conscious of the stimuli. This phenomenon is known as blindsight. Besides this phenomenon, I will analyse mental disorders such as split brain (Trevarthen & Sperry, 1973; Gazzaniga et al., 1979) and unilateral neglect (Bisiach, 1997). These three mental disorders cause similar effects, but their lesions are different in nature. I will analyse whether patients with these brain conditions are phenomenally conscious of the stimuli presented in their neglected area. I will also tackle the question whether the nature of these mental disorders lies in cognitive or perceptual deficits. Finally, I will explore if any of these three mental conditions could demonstrate that phenomenology overflows cognitive accessibility.

In the last section, I will propose new empirical evidence and arguments concerning other sensory experiences – tactile and auditory experiences – to support Block's thesis. While Block focuses on visual experiences to support his thesis, many others have analysed tactile experiences (Gallace et al., 2010; Pritchett et al., 2011) and auditory experiences (Eramudugolla et al., 2005; Pavani & Turatto 2008) in order to explore whether phenomenal consciousness overflows cognitive accessibility. I will argue that some bodily reactions to external stimuli, without attention, might be cases of phenomenal consciousness without cognitive access. I will also argue that there are basic tactile sensations, such as those we have when we walk, which may be seen as cases of phenomenal consciousness without

cognitive access. This is so because our attention is focused on other tasks. Finally, I will examine some consequences of accepting Block's thesis; in particular, I will mention some ethical issues about vegetative states, dementia, the beginning of human life and some animals where there is a lack of cognitive access.

The issue of the nature of phenomenal consciousness matters in two different ways: firstly, if phenomenal consciousness overflows cognitive accessibility, this implies that the latter is not a constitutive condition of consciousness. Therefore, the issue matters in an ontological sense. Secondly, if phenomenal consciousness overflows cognitive accessibility, this means that some creatures that lack cognitive abilities might have conscious experiences. Hence, the value of those creatures should be reconsidered; since they could have a rich phenomenal life despite that they do not have cognitive abilities (Block, 2007:484). Therefore, the issue also matters in an ethical sense.

Before embarking on the analysis of the nature of phenomenal consciousness, I have to make clear that I adopt the physicalistic view (Edelman 2004). This means that phenomenal consciousness is ultimately a physical state (Block, 2007:482). I also endorse Baars' theory of consciousness: the Global workspace model. According to this theory, the neural correlate of consciousness is a functional property that is not located in a particular point of the brain, but it is widely distributed (Baars, 1988, 1997). I will not deal with issues about physicalism vs dualism (Searle, 1992) or the hard problem of consciousness (Chalmers, 1996). My goal is to explore whether phenomenal consciousness overflows cognitive accessibility.

1. AN ANALYSIS OF CONSCIOUSNESS, PHENOMENOLOGY AND COGNITIVE ACCESS: THEORIES AND CONCEPTS.

Despite scientific progress, consciousness remains one of the most complex phenomena to explain. Scholars from different disciplines – such as philosophy, neurosciences and psychology – tackle the problem of the nature of consciousness. In this dissertation, I will focus on a specific question about the nature of consciousness: is cognitive access a constitutive condition of consciousness? Answering this problem requires a conceptual analysis. However, as Block points out, it is also an empirical problem (2007:483). It requires empirical evidence to corroborate what are the necessary and sufficient conditions of consciousness. Thus, the problem of nature of consciousness is twofold: firstly, we have to clarify what we mean by consciousness; this is a pre-empirical stage. Secondly, we have to test empirically what is the neural substrate of consciousness.

As I will deal with consciousness in sensory mental states, another question arises: what are the necessary and sufficient conditions of a mental state? As Rosenthal suggests: "whatever else is true of mental states, it is plain that we would not count a state as a mental state at all unless it had some intentional property or some phenomenal property" (1986:332). A mental state has an intentional property when it is about something in particular. For instance, an intentional property of a visual state could be a particular book. A phenomenal property is a sensory quality of the content of the mental state experienced from the first person point of view. For example, a phenomenal property of a visual state might be the sensory qualities (colour, shape, etc.) of a particular book. In this dissertation, I will focus on a particular kind of mental state – sensory mental state. A subject *S* is in a sensory state *F*, when *S* receives sensory information. The crucial question is whether intentionality and phenomenology are

sufficient conditions to account for a sensory mental state. Some scholars have claimed that consciousness is also an essential property of mental states, while others have suggested that it is not (Rosenthal, 1986). I will argue that *phenomenal consciousness* is an essential property of sensory mental states. For this, it is required to analyse first the nature of consciousness and mental state.

Lycan distinguishes between 'consciousness of' and 'state/event consciousness'. The former signifies that the subject is aware of something, the latter means that the subject is aware of being in a particular mental state (Lycan, 1996). Notice that we should not confuse 'state/event consciousness' with being introspectively aware of a mental state. As Rosenthal states: "when we are reflectively or introspectively aware of a mental state, we are aware not only of being in that mental state; we are also aware that we are aware of being in it". (1986:337). The main question of this dissertation is the following: what are the constitutive conditions for being aware of a sensory mental state? Block (2007) distinguishes three main stances: (I) Metaphysical correlationism claims that a subject is not conscious of a mental state unless it is cognitively accessed. (II) Epistemic correlationism argues that cognitive accessibility is intrinsic to our knowledge of consciousness. We cannot know whether cognitive accessibility is not necessary for consciousness. (III) Block's stance claims that individuals might be conscious of their mental states without having cognitive access to these mental states. It also suggests that we can demonstrate this assumption empirically.

1.1 Different theories of consciousness.

Metaphysical correlationism claims that subjects are phenomenally conscious of a mental state iff they have cognitive access to that mental state. This means that to be aware of a phenomenal property of a mental state requires cognitive access to that mental state. Thus, for

example, you will not be conscious of a pain sensation if you do not have cognitive access to that mental state.

There are different theories that support metaphysical correlationism. We can divide them in two groups. On the one hand, the higher-order representation theories of consciousness (HOR). These theories could be subdivided in two attitudes: Higher-order thought theories of consciousness (HOT) and higher-order perception theories of consciousness (HOP). On the other hand, the attended intermediate-level representations theories of consciousness (AIR).

As Lycan states: "According to 'high-order representation' (HOR) theories of consciousness, a mental state or event is a conscious state or event just in case it (itself) is the intentional object of one of the subject's mental representations" (2004:1). On the one hand, HOT theories of consciousness claim that a mental state is conscious when it has been cognitively accessed by a high-order thought (Rosenthal, 1986, 2005; Gennaro 1996). On the other hand, HOP theories of consciousness suggest that a mental state is conscious when it is cognitively accessed by an internal scanning that involves a high-order attention (Armstrong, 1968, 1981; Lycan, 1996, 2004).

Rosenthal argues against the Cartesian view of mind that consciousness is not essential to all mental states (1986:331). The main motivation to support this assumption is as follows: if consciousness is essential to all mental states, the concept of consciousness is uninformative; it does not play any functional role. Claiming that a mental state is a conscious mental state would be trivial (Rosenthal, 1986; Schechter, 2012). Rosenthal aims to solve this problem by the HOT theory of consciousness. According to this theory, a conscious mental state requires a high-order thought. When there is no high-order thought about a particular mental state, that mental state remains unconscious. For instance, I will not be conscious of my visual

experience of a book over the desk, unless I have a high-order thought about that experience. However, this stance has to deal with two objections (Rosenthal, 1986; Lycan, 2004):

(I) It does not seem that human beings have a high-order thought about their mental states each time they are aware of their mental states. For instance, if the content of their sensory mental state is a painful sensation in their foot, it does not seem plausible the assumption that they are not conscious of that sensation, unless they have a high-order thought about the painful sensation in their foot.

(II) Some creatures lack the ability of having thoughts. However, it does not seem rational to assert that they cannot be conscious of their mental states. Rosenthal replies that these creatures are conscious creatures (they are awake) and they are conscious of some stimuli (they can move without tripping over obstacles). Nevertheless, they do not have the ability of being conscious of their mental states (Rosenthal, 1986). I argue that Rosenthal's reply is not convincing, since it would mean that those creatures which lack of the ability of having thoughts would not be aware of sensations such as pain.

In order to solve these objections, Lycan presents a new version of HOR theories of consciousness – the inner-sense account or HOP theory. As he suggests: "consciousness is the functioning of internal *attention mechanisms* directed upon lower-order psychological states and events" (Lycan, 2004:99). According to this view, a mental state could be cognitively accessed without the necessity of a high-order thought. Although this version of HOP theories of consciousness seems more plausible than HOT theory of consciousness, it is not absent of difficulties. I will present two of them:

(I) HOP theories do not require high-order thoughts to account for consciousness, but it requires a complex cognitive system that lower animals do not attain (Carruthers, 2000; Lycan, 2004).

(II) Would it not be possible that individuals have a false high-order perception of a sensation? For instance, subjects could have the high-order thought of being in pain, when they do not have the first-order sensation, that is, they do not feel pain at all. To avoid this absurdity, high-order thoughts must be produced by an infallible system, but this assumption does not seem plausible (Shoemaker, 1994; Lycan, 2004).

Jesse Prinz (2000) suggests a new approach to metaphysic correlationism called the Attended Intermediate Representations theory (AIR). He claims that a conscious mental state does not require another mental state; for instance, a high-order thought or a high-order representation. According to this view, a visual mental state has different levels of processing: low, intermediate and high levels. The visual mental state becomes conscious when the high level visual areas sends signal back into the intermediate level area. Prinz sums the process of a visual event as follows:

> When we see a visual stimulus, it is propagated unconsciously through the levels of our visual system. When signals arrive at the high level, interpretation is attempted. If the high level arrives at an interpretation, it sends an efferent signal back into the intermediate level with the aid of attention. (2000:249).

This theory supports metaphysical correlationism because the mental state becomes conscious due to an attentional effect that entails cognitive accessibility (Block, 2007:486). This theory (known as the 'same-order' theory) seems to solve the difficulties that I mentioned above for HOR theories of consciousness; since it does not require an infallible

complex cognitive system. Nevertheless, we can suggest that phenomenal consciousness is a basic and primitive skill which does not require cognition abilities. Thus, those creatures that lack cognitive abilities could be conscious of their mental states in a phenomenological sense, as long as they are capable of having mental states with phenomenal character.

Epistemic correlationism claims that we cannot know if there is a way of being phenomenally conscious of a mental state that is not by cognitive accessibility. As Chalmers asserts, measuring consciousness is problematic because we cannot do it directly (1998). We infer that a specific neuronal process could be the neuronal correlate of consciousness by attending to subjects' reports. Thus, we agree that when the information is cognitively available, then it is conscious information. How would we be able to point out the neural correlate of consciousness if it is not a specific cognitive process which allows reportability? Chalmers suggests that we cannot separate phenomenal consciousness and cognitive accessibility: "It is likely that the neuronal process involved in explaining access consciousness will simultaneously be involved in a story about the basis of phenomenal consciousness" (1998:127). Kouider et al. suggest that the main motivation of endorsing epistemic correlationism lies in the fact that there is a lack of scientific criterion:

> Given the lack of scientific criterion, at this stage at least, for defining conscious processing without reportability, the dissociation between access and phenomenal consciousness remains largely speculative and even possibly immune to scientific investigation (2007:2028).

Therefore, epistemic correlationism is a stance which does not have any kind of metaphysical commitment about phenomenal consciousness. The debate is between metaphysic correlationism and Block's stance, because they support opposing views. While Block claims that phenomenal consciousness overflows cognitive accessibility, metaphysic correlationism

states that it does not. Epistemic correlationism suggests that Block's thesis is possible, but it is not scientifically tractable.

Block claims that we cannot give a complete explanation of phenomenal consciousness through cognitive accessibility. He suggests that the machinery underlying phenomenal consciousness is not the same as the machinery underlying cognitive consciousness; therefore, sensations are not necessary linked to cognitive abilities (Block, 2007, 2008). Thus, some lower animals without cognitive abilities could be aware of their own sensations. If Block's stance is true, it would mean that our experiences could be phenomenologically richer than what we can report. However, this position is not absent of problems, I will mention two objections:

(I) If we accept that phenomenal consciousness does not require cognitive access, we cannot rule out the possibility that there are phenomenal states in the retina when it is about visual experiences (Prinz, 2007:522). Nevertheless, it seems absurd to state that the global workspace of phenomenal consciousness includes neural processes in the retina.

(II) Phenomenology is a non-functional concept. Phenomenal properties are not causal properties; they do not have any kind of effect. Hence, they are undiscoverable and epiphenomenal (O'Regan & Myin, 2007:250).

To solve these difficulties, Block has to show that we can point out the neural correlate of phenomenal consciousness in a part (or several parts) of the brain where cognitive accessibility does not take place. He also has to demonstrate that phenomenal consciousness has a causal role. However, it is not necessary to solve these issues to argue that Block's thesis is the best explanation of consciousness. In the next subsection, I will analyse three fundamental concepts related with consciousness in order to explore whether Block's stance

is more plausible than metaphysical correlationism. The three concepts are: sensory mental state, working memory and attention.

1.2 Analysing concepts: sensory mental state, working memory and attention.

What is the nature of a sensory mental state? I will argue that all sensory mental states have intentional and phenomenal properties, and they are, at least, phenomenally conscious states. The intentional property of a mental state is the content of the mental state. There are two main stances about the nature of the content of mental states: externalism and internalism. On the one hand, externalism claims that the content of our sensory mental states is an external object or event. On the other hand, internalism holds that the content of our sensory mental states is an internal state that represents a particular external object or event. I will not establish a debate between these two postures here, since it is not the aim of this dissertation (for further information, see Crane, 2001). I will grant externalism as the best explanation of the nature of the content of mental states. It is important to assert that I endorse externalism, since the consequences are crucial to analyse the nature of consciousness. Externalism entails the following: if subjects are conscious of a sensory quality of an external object by sensory experience (for example, the redness of a rose), subjects are conscious of the content of their own mental state. If we support externalism, to be conscious of a sensory mental state is not different from being conscious of the sensory qualities of an external object.

Besides intentional properties, sensory mental states require phenomenal properties. These properties are exclusive to mental states. A phenomenal property is a sensory quality experienced from the first person point of view. For instance, the tactile sensation we have when we catch a ball, or the visual sensation we have when we see a rose. I claim that those states that occur in our sensory system without involving phenomenal properties are not

mental states. For example, those physical states that human beings have in their retinas when their photoreceptors are stimulated by reflected light. Those internal events are sensory states, but not sensory mental states. Otherwise, whatever occurs in our sensory system would count as mental. This untenable stance comes from the categorical mistake to understand mental and physical properties as properties of the same category (Ryle, 1949). Although we endorse physicalism, we should recognize a special phenomenal way of thinking about mental states (Papineau, 2002:175). Hence, I argue that sensory mental states require these two conditions: intentionality and phenomenology.

At this point another question arises: are these two conditions sufficient to account for the nature of sensory mental states? As I said, the Cartesian view suggests that consciousness is an essential condition to all mental states, while other scholars reject this suggestion (Rosenthal, 1986). I argue that phenomenal consciousness is required for sensory mental states.

Once we understand phenomenal consciousness as a basic phenomenon which does not require cognitive accessibility, we should recognize that phenomenal consciousness is a constitutive condition for a phenomenal property, and therefore, for a sensory mental state. The argument is as follows:

(I) A phenomenal property is a constitutive condition of a sensory mental state.

(II) Phenomenal consciousness is a constitutive condition of a phenomenal property.

(III) Therefore, phenomenal consciousness is a constitutive condition of a sensory mental state.

As I said, a phenomenal property is a sensory quality experienced from the first person point of view. I argue that subjects cannot experience a phenomenal property if they are not phenomenally conscious of that phenomenal property. For instance, individuals cannot

experience a sensation of pain (phenomenal property) if they are not phenomenally conscious of that pain sensation. It is a contradiction to assert that one has a sensory mental state without being phenomenal conscious of that sensory mental state. But, is it possible to be phenomenally conscious of a particular sensory mental state without cognitive access to that sensory mental state? In the second and third sections, I will expose some arguments and empirical evidence to support that this is possible.

Block focuses on visual experiences to support his thesis – Phenomenology overflows cognitive accessibility. A way to address the issue of consciousness from a neural perspective is as follows: is the capacity of the visual phenomenal memory system greater than the capacity of the working memory? (Block, 2007:489). Working memory refers to those set of neurons of the global workspace where cognitive accessibility takes place. As Block's states: "Working memory capacity is often understood in terms of 'slots' that are set by the cognitive architecture" (2007:489). There are many psychological experiments whose aim is to set the number of items that working memory is capable to store in a given time. In the second section, I will expose two experiments (Sperling, 1960; Landman et al., 2003) that Block analyses in order to support his thesis.

Advocates of metaphysical correlationism claim that the visual phenomenal memory capacity depends on the working memory capacity. This interpretation bears to the conclusion that our visual experiences are sparse. We are conscious of those items that have been stored by our working memory in a given time. Thus, for example, imagine that we conduct an experiment in which a list of ten numbers is presented to the subjects for half a second. They have to report which numbers appear in the list. If they are capable to report four of ten numbers, this means that they were phenomenally conscious of only the four numbers that they reported, since they had cognitive access to those numbers, but not to the rest. Advocates of metaphysical correlationism argue that the suggestion that the subjects were conscious of all

numbers is an illusion, by which they confuse potential phenomenology for actual phenomenology (Block, 2007:491). However, Block rejects the metaphysical correlationism interpretation. He would claim that our subjects were phenomenally conscious of all the numbers, even though they were not able to identify all of them. According to Block, our visual phenomenal memory system is different from our working memory system. The former does not include those set of neurons of the global workspace where cognitive accessibility takes place, and its capacity is greater than the working memory capacity, which takes place in the frontal and parietal cortex (Block, 2007: 497).

Moreover, some advocates of metaphysical correlationism claim that accessed information by the working memory requires attention. Therefore, attention is a constitutive condition for phenomenal consciousness (Mack & Rock, 1998; Prinz, 2000; Noë, 2004; Dehaene & Changeux, 2011; O'Regan, 2011). The number of items that we are able to attend to depends on the number of items that our working memory is capable to store in a given time, and vice versa.

Attention is the process of selecting sensory stimuli from the environment. As Lamme states: "Attention is a selection process where some inputs are processed faster, better or deeper than others, so that they have a better chance of producing or influencing a behavioral response or of being memorized" (2004:866). There are two different attentional systems: bottom-up exogenous and top-down endogenous. The former is driven by the features of external stimuli, which are intrinsically salient. For instance, it could be caused by a flower that stands out from the rest of flowers due to its peculiar colour or smell. The latter is motivated by specific goals from a personal point of view. This type of attention occurs when subjects select inputs from a particular region of their environment. For example, subjects could choose to attend to the top-left quadrant of their visual field in order to find something in

particular. While top-down endogenous attention is under voluntary control, bottom-up exogenous attention is involuntary (Pinto et al., 2013).

In the next section, I will explore those cases analysed by Block to support that phenomenal consciousness overflows cognitive access. This thesis entails the following consequences: (I) subjects could be conscious of a sensory mental state in a phenomenal sense, without having cognitive access to such sensory mental state. (II) Attention is not a constitutive condition for phenomenal consciousness. (III) Visual phenomenal memory capacity is greater than working memory capacity. If we can demonstrate that Block's thesis is true, this would mean that Block's stance is better than metaphysical correlationism to explain the nature of phenomenal consciousness. For this, empirical evidence is required.

2. EMPIRICAL EVIDENCE THAT SUPPORTS BLOCK'S STANCE.

As I said, Block points out that the problem of consciousness is an empirical one. Empirical evidence is required to know whether phenomenal consciousness overflows cognitive access. Some psychological experiments could reveal some clues about the issue. Moreover, neurological scanning might be a useful tool to suggest where in the brain the neural substrate of phenomenal consciousness takes place. In this section, I will analyse three different cases that Block suggests to support his thesis. Firstly, I will deal with the change blindness phenomenon. Secondly, I will address the Sperling and Landman et al. experiments. Finally, I will tackle special mental conditions in which subjects claim not to see the external stimuli, but they can identify them when they have been prompted to do so.

2.1. Change blindness

Change blindness is a phenomenon that occurs when subjects fail to detect changes in their visual environment. There are changes in the environment that are noticeable to the human eye, while others are not. Nevertheless, we are not always capable to identify a change that is noticeable to the human eye, even when the object is located in the centre of our visual field. For instance, imagine that you are looking for a criminal who is going to pass across Trafalgar Square. You can see all corners of Trafalgar Square from your vantage point. However, the place was crowded, and you could not identify the criminal, even when you were looking at the spot where the criminal was. This is a case of change blindness. Change blindness is a very common phenomenon which may happen many times throughout the day.

Compare *Figure 1* and *2* (Block, 2008). Can you see the difference? Although the difference is not a small detail, subjects have troubles to distinguish between these two pictures. In this case, the difference is that there is not jet engine in *Figure 2*. At this point, a debatable question arises. Did you see the jet engine in *Figure 1*, and the part of the airplane where the jet engine is missing in *Figure 2*, before noticing the difference? Some scholars claim that you could not see them; otherwise, you would have been able to report the difference from the moment that you saw them.

Figure 1: Change blindness. The airplane example (1). Compare this with *figure 2*. There is a difference between the two pictures. Can you see it? (Block, 2008:296).

According to these scholars, change blindness suggests that the content of visual experiences is sparse. Attention is required for detecting a change, and therefore, seeing those elements that change (Simons, 2000:4). Advocates of the AIR theory of consciousness argue that the change blindness phenomenon is an empirical evidence to claim that only those elements

which have been encoded by our working memory are consciously perceived. The difficulty to detect the difference between the *figures 1* and *2* lies in the fact that subjects can perceive only those elements which have been attended. As O'Regan et al. state: "what an observer 'sees' at any moment in a scene is not the *localization* he or she is directly fixating with the eyes, but the *aspect* of the scene he or she is currently attending to" (2000:209). According to these scholars, we suffer the illusion of seeing an entirely visual scene at a given time, when in fact, very little of our visual field is consciously processed (Dehaene et al., 2006:210; Wallis & Bulthoff, 2000:187). Notice that not all advocates of metaphysic correlationism would claim that our visual experiences are sparse because we only perceive attended stimuli. Advocates of HOT theories of consciousness would claim that our visual experiences are sparse because we do not have high-order thoughts about all elements of our visual scene.

Figure 2. Change blindness. The airplane example (2). Compare this with figure 1. There is a difference between the two pictures that can be difficult to detect (Block, 2008:298).

On the other hand, other scholars (myself included) claim that it might be highly possible that we have seen the jet engine in *Figure 1*, and the part of the airplane where the jet engine is missing in *Figure 2*, before noticing the difference. It is an illegitimate inference to assert that individuals are not able to see these elements unless they have detected the difference. Identifying a difference between two pictures requires a cognitive process more complex than detecting those stimuli where the difference takes place. In the first case we perceive a fact, while in the second we perceive objects.

Perceiving a fact requires a cognitive ability by which we identify that something is the case, while perceiving an object requires that we are phenomenally conscious of a stimulus. Detecting a stimulus does not imply that we know what is that stimulus; in order words, to identify the stimulus. For instance, we can be aware of a spot in the sky without knowing whether it is a star or a plane. Thus, we can see a plane in the sky without knowing what the content of our experience is – we do not identify the spot, which is a plane, as a plane. However, when it is about facts, we cannot see something without knowing what the content of our experience is. For example, we cannot perceive the fact that the plane takes off if we do not know that that plane takes off. As Dretske states: "The facts we perceive are just what we notice, what we come to know, about the objects we perceive" (2004:11). Hence, I suggest that a conscious visual experience of a fact requires a high-order thought, while a conscious visual experience of an object does not requires cognitive access, and therefore, neither attention nor high-order thoughts.

This approach to change blindness is known as the *fact* model (Dretske, 2004:11). This approach implies that those creatures whose nervous systems lack cognitive abilities cannot see facts. However, it does not mean that they cannot be conscious of the stimuli that change. They can be conscious of the stimuli before and after the change, but they cannot know that the stimuli have changed.

Block sums these two interpretations of change blindness as follows:

> The idea of the inattentional blindness view of the phenomenon is that subjects do not actually see the features that change (Noë 2004, O'Regan & Noë 2001). By contrast, the inattentional inaccessibility view (Block, 2001) says that subjects may see the features that change, but fail to notice the difference (2008:296).

I claim that the inattentional blindness approach to change blindness emerges from a point of view which does not have a clear distinction between perceiving objects and perceiving facts. When the distinction is clarified, and we know that we can perceive similar objects without noticing the difference, change blindness does not seem to demonstrate that the content of our visual experience is sparse, but rather that we see objects without noticing the change.

On the other hand, this phenomenon does not show that phenomenal consciousness overflows cognitive access. Advocates of metaphysical correlationism might accept the inattentional inaccessibility approach to change blindness, and in turn, claim that subjects have cognitive access to all elements that change, without having cognitive access to the change. For this, they could support two stances: On the one hand, it is possible that attention is not a constitutive condition for cognitive access. They could assert that we have seen the engine in Figure 1, and the part of the plane where the jet engine is missing in Figure 2, because those elements are cognitively accessed by other means that are not attentional. However, this posture has to explain how it is possible that the elements are cognitively accessed without attention. On the other hand, it is possible that attention is required for change detection, but it is not sufficient (Simons, 2000:5). Some advocates of metaphysical correlationism could suggest that perceiving a change required a high-order thought, while perceiving objects requires attention. Therefore, a plausible explanation of the phenomenon is that we do not

notice the difference, even when we have attended to those elements that change, because we lack the correspondent high-order thought.

Let suppose that your friend has changed his look. Would it not be possible that we have cognitive access to the content of our visual experience before and after he changed his look, but for whatever reasons we do not have cognitive access to the fact that he had changed his look? Simons explains this last stance as follows:

> People may form a representation of each view separately without ever becoming cognizant of the differences between the representations. In other words, the visual/cognitive system may assume the views are consistent unless something about the meaning of the scene (or the questioning of an experimenter) triggers a comparison. Observers may fail to detect changes even if they have represented all of the details (2000:10-11).

Therefore, although inattentional inaccessibility seems to be the best explanation of the nature of change blindness, it does not demonstrate that phenomenal consciousness overflows cognitive accessibility. In the next subsection, I will analyse two psychological experiments that Block proposes as empirical evidence to support his thesis.

2.2 The Sperling and Landman et al. experiments.

In 1960, Sperling started with his psychological experiments to confirm the existence and capacity of a visual memory which is known as iconic memory. This type of memory is a very brief visual memory system (less than 1000 ms) with a high storage capacity. It is suggested that iconic memory is an uncoded post-retinal visual memory system, that is, a visual memory system where cognitive access does not take place (Dick, 1974). Iconic

memory is previous to working memory in the visual process. Those visual elements that have been encoded were previously stored by the iconic memory.

In the Sperling experiment (1960), the subjects have to attend to a stimulus of an array of letters for half a second (see *figure 3*). They are asked to report what they have seen. The subjects report seeing all letters, but they can identify only four or five specific characters. Have they actually seen all letters, or they had the illusion of seeing all letters when they actually have seen only those letters that they reported?

P A B Z

G U H D

J F Y S

Figure 3. The Sperling experiment. Array of letters.

If individuals could identify four specific letters, this means that these letters were cognitively accessed by the subjects (the four letters were encoded by the working memory), and therefore, the subjects were phenomenally conscious of these letters. Were the subjects phenomenally aware of the rest of the letters? Sperling developed a method known as *partial report* to confirm that the subjects can remember all or almost all letters. The method is as follows: trained subjects hear a tone right after the letters disappear. The tone might be high, medium or low. If the tone is high the subjects have to report the top row, if it is medium the middle row, and if it is low the bottom row. Trained subjects were able to report between three and four specific letters of the cued row (Stazicker, 2011:167). Those trained subjects

did not know which tone will heard, but their reports present >75% level of accuracy. This outcome suggests that the trained subjects could see all or almost all letters; otherwise they would not be able to report with such level of accuracy. The conclusion of this experiment is that iconic memory can store all or almost all letters, while working memory can store no more than four or five. Does it mean that the subjects were phenomenally conscious of all or almost all letters, but they have cognitive access to those letters that have been reported?

Four decades later, Landman et al. (2003) conducted a change blindness experiment with a partial report method. The Landman et al. experiment consists in the following: a stimulus of eight rectangles is presented to the subjects for a half a second. Right after, the array is replaced by a blank screen, then another stimulus of eight rectangles appears, but this time the rectangles might have changed their orientation. The experiment has three different versions depending on when a cue appears (see *figure 4*). The outcome of this experiment is that the subjects can remember all or almost all of the orientations in the two latest versions of the experiment, where the cue appears in the first stimulus or during the blank (Block, 2007:488). Landman et al. suggest that four items or less are available for comparison (they are cognitively accessed), but the subjects' visual systems represent more than four items before the second stimulus appears (Landman et al., 2003:162).

Block argues that the Sperling and Landman et al. experiments are empirical evidence to support that phenomenal consciousness overflows cognitive accessibility. According to Block, in the Sperling experiment, the subjects are phenomenally conscious of all or almost all the specific letters, but they have cognitive access to only those letters that have been reported. Something similar happens in the Landman et al. experiment, the subjects are phenomenally conscious of all or almost all orientations of the rectangles, but they have cognitive access to only those orientations of the rectangles that have been reported. Some scholars have replied that those experiments do not provide enough evidence to claim

Block's thesis. If we distinguish between generic and specific phenomenology, Block's thesis does not follow from the experiments (Papineau, 2007; Sergent & Rees, 2007; Burge, 2007; Grush, 2007; Levine, 2007; Kouider et al., 2007).

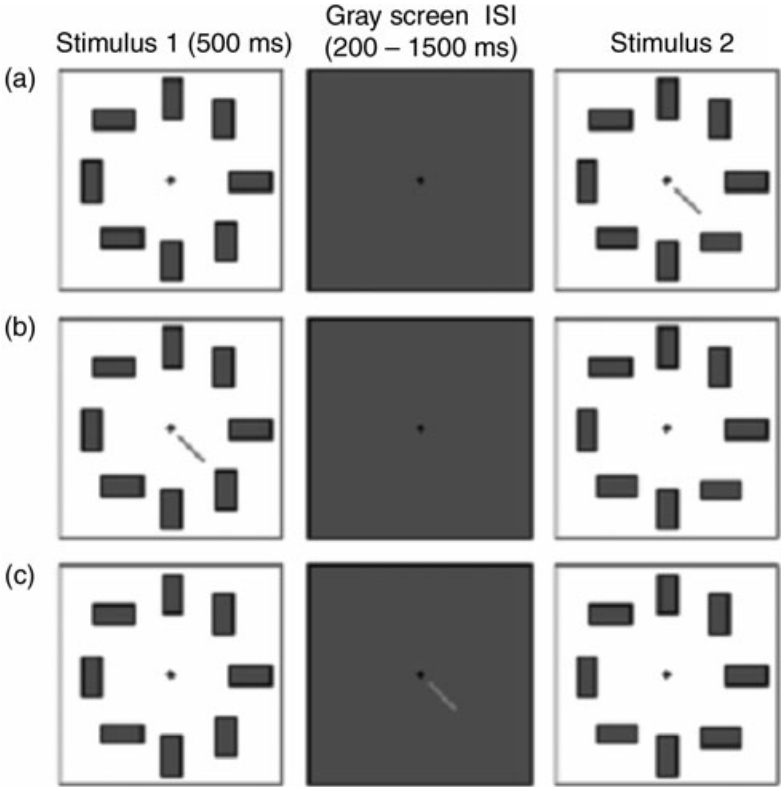

Figure 4. *An illustration of the Landman et al. experiment* (from Block, 2007:488). (a) represents the first version of the experiment, (b) the second version, and (c) the third. The subjects have to fix their attention to the dot that is in the centre of the rectangles. The subjects have to report whether the rectangle where the cue appears has changed its orientation.

According to these scholars, the subjects think that they can see all items for the reason that they have general phenomenology access to the stimulus. This means that they are phenomenally conscious of an array of letters or rectangles; but they are not phenomenally

conscious of every specific letter or orientation of the rectangles, which would mean to have specific phenomenology access to all the items. These scholars claim that to have general phenomenology access to the stimulus does not corroborate Block's thesis, since those subjects have also general cognitive access to the stimulus – they report to see an array of twelve letters or eight rectangles. Hence, we cannot claim that phenomenal consciousness overflows cognitive access unless we can show that the subjects have specific phenomenal access to all or almost all the items. Block concurs with the distinction between specific and general phenomenology, but he also suggests that these two experiments provide enough evidence to support that the subjects have specific phenomenal access to all or almost all the items, his argument is as follows:

> Recall that specific representations of all or almost all the items before the cue (though perhaps fragmentary representations) have to be postulated to explain the fact that subjects can report the items no matter which row is cued. So the options would appear to be either that there was no specific phenomenology before the cue, or that there was specific phenomenology involving all or most of the items, even if fragmentarily. As I just mentioned, subjects' testimony (and lack of surprise in what they can do) suggest the latter. (Block, 2007:533).

I argue that there is a fallacy – *petitio principii* (begging the question) – in Block's argument. He assumes that specific representation of all or almost all the items entails phenomenal consciousness of all or almost all the items. However, the former does not cause the latter necessarily. It is possible to suggest that iconic memory is an uncoded post-retinal visual memory system, where neither cognitive access nor phenomenology takes place. The iconic memory represents all or almost all items, but the subjects do not have any kind of subjective sensation of those elements which have been stored by the iconic memory. For instance, the sensation of perceiving the sensory quality of a particular letter 'F'. The elements are stored

by the iconic memory and some of them are transferred to the working memory system, where cognitive access and phenomenology occur. Hence, iconic memory would be a visual system where information is stored in a totally unconscious way, as it happens during lower-level vision processes in the retina. We could suggest that the trained subjects can identify the letters of a specific row for the following reason: there is enough time to identify the tone (high, medium or low) and to send the information corresponding to the tone from the iconic memory to the working memory. Therefore, the subjects were not phenomenally conscious of all specific letters, but only of those letters of the specific row.

Thus, although the Sperling and Landman et al. experiments might suggest that phenomenal consciousness overflows cognitive accessibility, they are not conclusive empirical evidence to claim that Block's stance is more plausible than metaphysical correlationism. It is required another ways to support Block's thesis. In the next subsection, I will analyse special brain conditions that Block suggests as empirical evidence to support his thesis.

2.3 Special brain conditions: split brain, unilateral neglect and blindsight.

So far, I presented psychological experiments for subjects who do not suffer from neuronal disorders. We could not find any conclusion concerning the nature of phenomenal consciousness through these experiments. Perhaps, an analysis about certain special brain conditions might reveal some clues about the nature of consciousness. In this subsection, I will introduce the following neuronal disorders: split brain, unilateral neglect and blindsight. I will analyse briefly each one of these conditions from a psychological and physical perspective – their abnormalities and deficits regarding perception and consciousness. I will also present the similarities and differences of these three conditions. Finally, I will explore whether any of these cases could cause phenomenal experiences without cognitive access.

Split brain is a mental disorder that happens when the brain hemispheres cannot communicate with each other due to a lesion in the corpus collosum. This condition causes perceptual, cognitive and linguistic deficits (Dretske, 2010:161). Concerning perceptual experiences, those patients who suffer from split brain have problems to consciously perceive certain stimuli. As Trevarthen and Sperry state: "When visual material is presented in the left half-field, the subjects have appeared unable to report anything but the onset or offset of light, or very gross brightness or directional differences, and they deny having seen any discrete item" (1973:547). Therefore, this suggests that the patients cannot perceive the stimulus. However, psychological experiments have been conducted in order to know whether the visual information is processed in some way, despite that the subjects cannot identify the stimulus. Dretske (2010) presents the following example:

Palmer (1999:631) carried out an experiment for a split-brain patient, N.G., which might reveal important findings: the patient has to fix her attention to a dot which is located in the centre of her visual field. Then, a spoon was presented to the left side of dot (the information goes to the right hemisphere where linguistic functions are absent). She was asked what she saw and she replied 'nothing'. After that, she was asked to put her hand inside a box full of objects, and pick out the object that had just been shown, without looking what is inside the box. She finally picked up the spoon, but when she was asked what she was holding, she replied 'a pencil' (verbal behaviour controlled by left hemisphere).

The outcome of this experiment shows that the visual information of the spoon is processed by her visual system; otherwise, why did she choose the spoon? The fundamental and debatable question is whether she had a conscious visual experience of the spoon. There are at least three possible explanations of this phenomenon:

a. She had a conscious visual experience of the stimulus because the information was cognitively accessed. However, she could not report that she saw a spoon because she has a cognitive deficit which does not allow knowing what she has perceived. In other words, she did not have cognitive access to the fact that she had seen a spoon.
b. The visual information of the stimulus was not cognitively, but phenomenally accessed. Therefore, she was phenomenally conscious of the spoon. She could not report that she saw a spoon because the information was never encoded by the working memory. However, she could pick up the right object because the information was processed by the iconic memory, where phenomenal consciousness takes place. Thus, the subject was phenomenally conscious of the stimulus without having cognitive access.
c. She had not any conscious experience of the stimulus. However, the visual information was processed unconsciously. She chose the spoon because the information was processed and encoded, but the patient did not have any conscious experience of the spoon when it was presented in the left side of her visual field.

Block's thesis would be supported by empirical evidence if interpretation (b) is the best way to explain the nature of the phenomenon. However, it seems that the other two interpretations are as plausible as interpretation (b). Therefore, we cannot conclude that the best explanation of this experiment is the second interpretation. At the end of this subsection, I will suggest a psychological experiment which could bring important findings concerning consciousness, but first, I will introduce the other two mental disorders: unilateral neglect and blindsight.

Unilateral neglect is a neurological disorder that might occur due to unilateral brain damage. Those who suffer from unilateral neglect often behave as if they are totally unconscious of the stimuli that are presented in the contralesional side of their visual field. As Driver and Vuilleumier state:

> Neglect patients often behave as if half of their world no longer exists. In daily life, they may be oblivious to objects and people on the neglected side of the room, may eat from only one side of their plate, read from only one end of a newspaper page, and make-up or shave only one side of their face. (2001:40).

Although split brain and unilateral neglect are disorders of different nature – damages in corpus collosum and unilateral brain respectively. It seems that these two conditions cause a similar psychological deficit. The patients claim not to see the stimulus presented in their damaged visual field. If we conduct the psychological experiment presented above, would unilateral neglect patients pick up the spoon as it happens with split brain patients?

There have been carried out similar psychological experiments for those who suffer from unilateral neglect. The Marshall and Halligan experiment (1988) presents two drawings of a house to the patients. Both drawings are identical, except for the difference that one of them has flames on the left side (the neglected area). Despite the patients report that both houses are the same, they are invited to choose which one they prefer. Surprisingly, the subjects chose the non-burning house. However, Bisiach and Rusconi replicated the same experiment (1990), but this time the outcome was different: two of the patients chose the burning house, while only one chose the non-burning house (Bisiach, 2000:246). Therefore, we cannot conclude anything from this type of experiment. Nevertheless, imagine that all subjects who suffer from unilateral neglect would choose the non-burning house. This would not bring any finding concerning the question whether the subjects were conscious of the stimuli, since the explanations (a), (b) and (c) are equally plausible to explain this phenomenon.

Could blindsight bring any conclusion concerning consciousness? Blindsight is a phenomenon that it could happen to individuals who are cortically blind due to lesions in the primary visual cortex. Like those who suffer from split brain or unilateral neglect, blindsight

patients claim that they cannot see the stimulus presented in their neglected area (Farah, 2000:206). However, they are able to follow targets with their eyes and identify visual figures (Overgaard, 2011:474). Weiskrantz defines blindsight "as a residual visual capacity without any perceptual awareness" (Overgaard, 2011:473-474). As we can see, this definition is assuming that the best explanation of the phenomenon is given by interpretation (c), namely: the visual stimulus is processed in an unconscious way. However, I argue that we can carry out a psychological experiment by which, depending on the results, interpretations (a), 'the visual information of the stimulus was cognitively accessed', and (b), 'the visual information of the stimulus was not cognitively, but phenomenally accessed', are more plausible than interpretation (c). The experiment is as follows:

A picture of something that can frighten the subjects who suffers from one of the three neural diseases is presented in their neglected area. For instance, we show a picture of a spider to subjects who also suffers from arachnophobia. Immediately, we measure the patients' bodily reactions by mechanisms which can detect quickly if the patients have been affected by the stimulus. Three different results may occur:

(1) The patients have been affected by the stimulus (for instance, the patients experienced stress because they are afraid of the stimulus) and they claim that they could see a spider. This would be enough evidence to claim that the subjects were fully aware of the stimulus. Therefore, the only correct explanation of the phenomenon would be interpretation (a).

(2) The patients have been affected by the stimulus and they claim that they could not perceive any particular object. This would be an empirical evidence to claim that the subjects were phenomenally conscious of the stimulus. Therefore, we should rule out interpretation (c). How would they be afraid of a particular stimulus if they were not

phenomenally aware of that stimulus? However, interpretations (a) and (b) are possible.

(3) The subjects have not been affected by the stimulus and they claim that they could not perceive any particular object. This result suggests that none of the three interpretations are plausible; there was not sensory mental state at all. Unless in a subsequent experiment, the patients choose the picture of the spider among other pictures which have been presented (similar case to the spoon experiment). In this case, we can suggest that interpretation (c) is more plausible than the others.

This type of experiment is better than the other two that I presented to suggest whether the subject was phenomenal conscious of the stimulus. That is so, since depending on the results, not all interpretations are equally possible.

Could it also be a decisive experiment to support Block's thesis? It would be if after getting the second result (2), we can demonstrate that the interpretation (b) is more plausible than (a). I argue that if the subjects of the experiment suffer from blindsight, interpretation (b) is more plausible than (a) after getting result (2). However, I also argue that result (3) is more likely than (2) for blindsight patients. The reason is as follows: it is clear that split brain or unilateral neglect patients have cognitive deficits which go beyond perceptual experience. For instance, N.G. claims that she was holding a pencil when she was holding a spoon (Palmer, 1999:631). Moreover, those who suffer from unilateral neglect shave only one side of their face (Driver & Vuilleumier, 2001:40). Those cognitive deficits go beyond the perceptual experience because they might cause delusions about how the world is. The patients who suffer from unilateral neglect behave as if he shaved his whole face, or the split brain patient identified the object as a pencil. Hence, if we carry out the experiment and get result (2) with a patient who suffers from split brain or unilateral neglect, explanation (a) is plausible. It is possible that the patients could not report their visual experience which has been cognitively

accessed due to a different cognitive mistake. For example, a false high-order thought about their visual experience.

Nevertheless, this explanation does not seem plausible with blindsight patients, because their lesions take place in the primary visual cortex. It has been suggested that cognitive deficits such as delusions and cognitive abilities which allow judgements and verbal reports do not take place in the primary visual cortex, but in other areas of the brain such as the frontal lobes (Alexander, 2011). This suggests that the patients who suffer from blindsight would not have any cognitive deficit beyond the visual experience (for instance, a cognitive deficit that deprives patients of knowing what they perceive); therefore, the assumption that blindsight patients have cognitive access to the stimulus, but they cannot report it, does not seem plausible. This would mean that if we get result (2) with patients who suffer from blindsight, explanation (b) is more plausible than (a). Nonetheless, as we have seen throughout the dissertation, some scholars have suggested that the primary visual cortex is required for visual phenomenal consciousness (Block, 2007). Hence, it would be a surprise to get result (2) with blindsight patients. In order to rule out possible interpretations of the phenomenon, I invite psychologists to conduct experiments as this model I just have presented.

In this section, we have studied those cases suggested by Block to support his thesis. I conclude that none of these experiments are conclusive to assert that phenomenal consciousness overflows cognitive access. In the next section, I will expose some arguments and experiments concerning other sensory experiences in order to support Block's thesis. Finally, I will explore some consequences of accepting his thesis.

3. NEW EMPIRICAL EVIDENCE AND ARGUMENTS FOR BLOCK'S THESIS.

So far, I have tackled the issue of the nature of phenomenal consciousness through visual experiences. As I could not find any conclusive empirical evidence to support Block's thesis, henceforth, I will address the problem from other sensory experiences. Firstly, I will focus on auditory experiences, change deafness experiments and possible cases where phenomenal consciousness overflows cognitive accessibility. Secondly, I will focus on tactile experiences. I will argue that we should analyse everyday cases in order to know whether phenomenology overflows cognitive accessibility. Finally, I will examine some ethical consequences concerning the nature of phenomenal consciousness.

3.1 An analysis of phenomenal consciousness in auditory and tactile experiences.

In the last decade, Eramudugolla et al. (2005) conducted an auditory experiment based on the change blindness paradigm. The experiment is as follows: there are two versions. In the first version, the subjects have to listen to six auditory objects – "trumpet reveille, piano solo, cello solo, female voice, bird's chirrups and hen's clucking (2005:1109)" – during 5 seconds. Right after, they have to listen to a white-noise burst for 500 ms, and then, another auditory scene for 5 seconds, in which one of the auditory objects might be missing. The subjects have to report which auditory object was missing (if there was any) after the interruption (the white noise burst). The second version of the experiment was similar to the first version, but with the exception that before the trial, the subjects were shown the name of an auditory object (e.g., "piano"). They have to report whether the sound produced by that object was missing after the interruption. Not surprisingly, the outcome of this experiment shows that in

the second version, the subjects could detect if there was a change in the auditory scenery; while in the first version, the subjects failed to detect the change due to a lack of attention.

Eramudugolla et al. claim that two conclusions about the nature of auditory perception follow from this experiment. Firstly, they assert that directed attention eliminates change deafness in complex auditory scenes (2005). The chances of noticing a change are greater when the subjects are paying top-down attention to the stimulus where the change takes place. In fact, it has been argued that attention is a required cognitive ability to detect a perceptual change in an object. Secondly, they also conclude the following: "our results indicate that auditory perception is limited by attention and that our experience of a rich and detailed auditory world may be largely illusory" (Eramudugolla et al., 2005:1112). They suggest that we perceive only those objects that have been attended. The number of objects that we can attend in a given time (5 seconds in the case of the experiment) is four. They argue that if the subjects could attend to more than four items in the given time, they would have been able to detect that an auditory object had disappeared after the interruption, in the first version of the experiment. I argue that the second conclusion does not follow from this experiment.

As I suggested when I analysed the change blindness phenomenon, it is an illegitimate inference to claim that the subjects could not perceive a stimulus when they were not able to detect a change which takes place in that stimulus. Perceiving a change requires a cognitive process more complex than perceiving an object. I claim that we can apply the same argument to any sensory experience. Therefore, it is possible that the subjects were phenomenally conscious of the auditory object that disappears after the interruption, even though they were not able to detect the change. Hence, we cannot conclude from this experiment that our auditory experience is sparse. But, how can we argue otherwise? How can we demonstrate that the subject was phenomenally conscious of all the auditory objects?

Could we use the Eramudugolla experiment to demonstrate that phenomenal consciousness overflows cognitive access? I suggest that there is a way to know whether the subjects were phenomenally conscious of all items. We have to conduct the same experiment, but without letting the subjects know how many auditory objects will appear. Their task is to report how many different auditory objects they could hear. If their answer is right (six auditory objects), this suggests that the subjects were phenomenally conscious of the six items, although they could not identify each of them. At this point, the advocate of metaphysical correlationism could claim that the subjects could report that there were six auditory objects, because they had general cognitive access, and therefore, general phenomenal access to a set of six auditory items. Nevertheless, I argue that the argument that distinguishes between specific and general phenomenology does not work in this case. In order to answer the question correctly – there were six auditory items –, the subjects must have specific phenomenal access to all the items for the following reason: to claim that there are six auditory objects, they had to be able to detect each auditory objects as a single auditory object. Otherwise they could have interpreted two auditory objects as a single auditory object.

Moreover, if the working memory storage is actually up to four items, they could not detect six different auditory objects, unless phenomenal consciousness overflows cognitive accessibility. Of course, we cannot conclude that Block's thesis is true through this experiment for the following reasons: firstly, I did not demonstrate that the subjects can detect the six auditory objects. Secondly, it could be argued that working memory capacity is bigger than it was expected. However, the suggested experiment could reveal some clues about the nature of phenomenal consciousness.

Although Block focuses on visual experiences to support his thesis, he also presents an illustration of an auditory experience that could be understood as a case of phenomenal experience without cognitive access. He invites us to consider the common phenomenon in

which a person notices that a background sound disappears – for instance, the noise produced by a refrigerator (Block, 1998:26). I have defined that noise as background sound because when the electrical device is emitting the noise, the subjects are not attending to that noise, but to other stimuli from very different nature (other sensory experiences). Block suggests the following: "before the refrigerator went off, you had the experience (phenomenal consciousness) of the noise (let us suppose) but there was insufficient attention directed towards it to allow direct control of speech, reasoning or action" (1998:26). Could we explain this phenomenon through the three different interpretations that I exposed in the spoon experiment? (a) Subjects have a conscious auditory experience of the stimulus because the information was cognitively accessed. (b) The auditory information was not cognitively, but phenomenally accessed. (c) Subjects have not any conscious experience of the stimulus.

I argue that there is a good reason to reject interpretation (c). If individuals were not conscious of the stimulus, how is it possible that they were aware that the noise disappeared? Someone could argue that the information was processed unconsciously, and when the noise disappears, the subjects are cognitively aware that there is something missing, namely: the background sound. However, I do not think that this is a plausible explanation, since those who experience this phenomenon normally feel a relief when the noise went off. This relief is a consequence of another phenomenal experience, which is precisely the sensation they have when they are phenomenally conscious of the background sound. Hence, they must be at least phenomenally conscious of the noise; otherwise there is not a reasonable explanation of why individuals feel a relief when the noise disappears.

Is it possible to reject also interpretation (a), to assert that this is a case of phenomenal consciousness without cognitive access (b)? Consider the following thought experiment: Sophia is cognitively aware of an acute noise produced by her television. She tells her friend that the noise does not allow her to focus on the Olympics games. At some point, Sophia

ceases to attend to the noise, since she is again focused on other experiences, for example, the visual experience of a tennis match. Thus, although the noise is still there, at some point it becomes an unattended stimulus.

Those who claim that attention is a constitutive condition for phenomenal awareness are forced to claim that Sophia was not phenomenally conscious of the noise at that moment that the stimulus is unattended. However, when the noise went off, Sophia notices the change, that is, the fact that the stimulus disappeared. How could Sophia notice the change, if she is not conscious of the stimulus that changes? She must be conscious of the stimulus in some way. Therefore, if attention is required for cognitive accessibility, and there is a lack of attention to the noise, Sophia must be phenomenally conscious of the stimulus for noticing that this particular stimulus disappeared at the moment that disappeared. The explanation of the phenomenon would be as follows: when the noise went off, Sophia is not phenomenally conscious of the noise anymore. This lack of phenomenal consciousness is what makes Sophia be cognitively conscious of the fact that the stimulus disappeared.

This is a problem for metaphysical correlationism, since they are forced to claim that attention is not a constitutive condition for cognitive accessibility to support interpretation (a). But, what would it mean that a stimulus is cognitively accessed, if a cognitively accessed stimulus is not stored in the working memory and it does not allow reportability? I suggest that this thought experiment is a suitable example to support that Block's stance is more plausible than metaphysical correlationism. I will analyse below cases of tactile experiences in order to provide more evidence to support Block's thesis.

The change blindness phenomenon is also common in tactile experiences. Gallace et al. (2010) conducted a tactile change blindness experiment to figure out what can elicit this phenomenon. They conclude that secondary tasks that involve body movement impair tactile

change detection performance (Gallance et al., 2010:228). This conclusion suggests that it is more difficult to have cognitive access to a stimulus when individuals are performing multiple tasks. This is a reasonable assumption, since our working memory capacity is limited. However, it is not reasonable to claim, as some advocates of metaphysical correlationism would do, that the participants of the experiment are not phenomenally conscious of the stimuli, because they cannot detect the change. Advocates of the Block's stance suggest that it is possible that they were phenomenally conscious of the stimuli despite they were not aware of the change.

Another tactile change blindness experiment conducted by Pritchett, Gallace and Spence (2011) brings some interesting results regarding the issue of phenomenal consciousness. The outcome of one of their experiments is as follows:

> The results of Experiment 1 revealed that when participants failed to notice the occurrence of a tactile change between the two consecutively-presented displays, they were still able (when forced) to determine whether the number of stimuli in the second display was higher or lower than the number of stimuli in the first display (2011:537).

Is this a case of phenomenal consciousness without cognitive access? Pritchett, Gallace and Spence suggest the following explanation of the phenomenon: "neural representations of the two displays do exist within the brain, but that their level of activation sometimes remains below the threshold required for this information to access consciousness" (2011:544). This explanation is a way to support interpretation (c), as it could be suggested in Sophia's case. Nevertheless, this case is very different. While Sophia notices the change and she has a feeling of relief, the participants in this experiment are not aware of the change. In this case, we cannot demonstrate that those neural representations within the brain cause a phenomenal experience. For this, we have to show that there was a sensation experienced from the first

person point of view. Therefore, it is possible that the representations of the two displays were processed in an unconscious way.

So far, we have explored psychological experiments which are very different from everyday cases. In most psychological experiments the environment is poor of stimuli, while in everyday cases individuals usually receive plenty of information from their environment, as happens in Sophia's case. All this information cannot be processed in the same way, since our working memory capacity is limited. Thus, in everyday cases we have to give priority to some information by attention. Those stimuli which have been attended are cognitively accessed. Nevertheless, we receive more information from the environment than our working memory can store. Is this information phenomenally accessed, or is it just information that has been encoded unconsciously in our nervous system? I invite psychologists to carry out experiments which simulate cases very similar to everyday experiences, where we receive plenty of information (see Schwitzgebel, 2007). I also invite readers to think of everyday experiences, especially regarding tactile experiences. I will present below two possible everyday cases where it seems that there is phenomenal consciousness in the absence of cognitive access.

Are you phenomenally conscious of your tactile experience each time you walk? Schwitzgebel analyses basic experiences such as the tactile experience of your feet in your shoes (2007:5). He asserts the following: "People have some, but only a very limited, sensitivity to unattended stimuli. The question remains: Is that sensitivity (whatever it is) enough to underwrite consciousness?" (Schwitzgebel, 2007:12). I argue that if it is true that there is sensitivity, there must be phenomenal consciousness, since sensitivity is a phenomenal property. As I argued in the first section of this dissertation, if individuals have an experience with a phenomenal property, they must be phenomenally conscious of that

property, since phenomenal consciousness is a constitutive condition of a phenomenal property.

Furthermore, I argue that it must be true that there is still sensitivity even when you are not attending to the tactile experience of your feet. The reason is as follows: I remember once that I was sat on a chair and I lost sensitivity on my feet. At that moment, I had cognitive access to the fact that I lost sensitivity (I invite psychologists to conduct experiments in which the participants lose sensitivity without knowing it). The crucial point of this experience is the following: how subjects would be aware of this change – losing sensitivity in their feet –, if they are not phenomenally conscious of their tactile experience before the change? If they were not phenomenally conscious of such tactile experience, there would not be any change from the first person point of view. Individuals would never be aware of such change in their body. This is a similar case to Sophia's case. The subjects must be conscious of the stimulus to notice the change. However, the stimulus was unattended; therefore, it could be a case of phenomenal consciousness without cognitive accessibility.

The second possible thought experiment is as follows: Sophia and Belinda are having an interesting conversation in a busy day at the beach. At some point, a bug lands on Belinda's foot. She shakes her foot without looking at it. Suddenly, Sophia stops the conversation and asks why she shook her foot. Belinda looks at Sophia surprised and says that she did not shake her foot. However, Belinda actually shook her foot, but she did not realize it because she was focused on the conversation.

I suggest that Belinda had a tactile experience on her skin caused by the bug, and for this reason she shook her foot. She was phenomenally conscious of the stimulus; otherwise, why would she move her foot if she did feel nothing at all? Notice that this is not a reflex action (an involuntary instant movement). Belinda shook her foot as if someone who is aware of the

bug would do. Thus, the movement that Belinda performs was intentional. The sensible fibres of her skin send inputs to her brain, where phenomenal consciousness takes place, and due to this sensation, she shook her foot. However, she did not realize that there was something on her foot, the tactile experience was unattended. In other words, she was not aware of the fact that she had a tactile sensation, but this does not mean that she did not have that feeling. The subject's reaction is what demonstrates that she was phenomenal conscious of her experience. Why would she shake her foot, if it is not because she felt something in her foot? Therefore, I conclude that it could be a case of phenomenal consciousness without cognitive access.

I suggest that we could conduct psychological experiments based on this case to explore whether Block's thesis is true. Of course, this type of experiment is difficult to carry out. It could require many trials to get a similar result to Belinda's case. But if this is possible, it would be a psychological experiment which brings empirical evidence for Block's thesis.

Moreover, we would be able to point out the neural substrate of phenomenal consciousness in tactile experiences. Gallance and Spence (2008) claim that the neural correlates of consciousness in tactile experiences might involve higher order areas: "such as S2, the posterior parietal cortex, the TPJ, and the pre-motor cortex" (2008:227). Notice that they are referring to consciousness in a cognitive sense. Are these brain areas also required for phenomenal consciousness? If we support metaphysical correlationism, they must be required; but if we endorse Block's stance, it could be possible that some of those brain areas are not necessary for phenomenal consciousness. If Sophia and Belinda's cases are examples of phenomenal consciousness without cognitive accessibility, we could use neurophysiological tools while they are having those experiences to figure out what parts of the brain constitute the neural correlate of phenomenal consciousness.

I conclude that analysing different types of sensory experiences is an excellent strategy to support Block's thesis. We should not focus only on visual experiences, since what we want to demonstrate is that phenomenal consciousness overflows cognitive accessibility. It could be possible that this thesis is true for some sensory experiences, but false for others. Notice that the possible neural correlates of cognitive consciousness might vary depending on which kind of sensory experience we are analysing. The same could occur concerning phenomenal consciousness. As Gallace and Spence suggests: "Tactile consciousness may reflect a fundamentally unisensory phenomenon (in terms of its phenomenology), one that is well-differentiated from the consciousness of stimuli presented in other sensory modalities (Gallance & Spence, 2008:396). In the last subsection of this dissertation, I will analyse some consequences of accepting Block's thesis. I will explore two mental diseases – vegetative states and dementia. Then, I will tackle ethical consequences concerning creatures where there is a lack of cognitive access, such as lower animals and human babies.

3.2 Ethical consequences of accepting Block's thesis.

If it is true that phenomenal consciousness overflows cognitive accessibility, and therefore, some individuals might have phenomenal experiences without cognitive access, we should reconsider the value of their mental life. There are some human beings that, due to certain mental conditions, have lost their ability to report. I refer to those persons who are in a vegetative state or suffer from dementia. Is it not possible that some of those patients have phenomenal experiences that they cannot report due to a lesion in their neuronal system? As Vanhaudenhuyse et al. mention, inappropriate medical analyses have diagnosed that some patients who are in vegetative states do not have conscious experiences. After many years of recovery, these patients could report that they were phenomenally conscious of many

experiences (2007:530). An example of such horrible case is documented by Tavalaro in her book *Look Up for Yes* (Tavalaro & Tayson, 1997).

Ultimately, the blame of such diagnoses which are extremely harmful for the patients lies in a lack of knowledge about the nature of phenomenal consciousness. A poor conception of phenomenal consciousness that we should avoid is that conception based on the reportable principle: "whatever it is about a state that makes it unreportable, would also preclude its being phenomenally conscious" (Block, 2007:483). It must be known that those patients who have lost the ability to report might have cognitive access to some experiences, and therefore, they are phenomenally conscious of these experiences. Thus, for instance, some people who are in vegetative states could feel pain even when they are not able to report their experience.

On the other hand, it is also possible that some patients who suffer from dementia could report having phenomenal experiences, when they do not have actually such phenomenal experiences. This would be a particular case of delusion, by which the patient has a false high-order thought about a particular phenomenal experience, for this reason, she reports to have such phenomenal experience (Margallo-Lana et al., 2001). Hence, we cannot always rely on reports (or lack of reports) to claim that a subject has (or does not have) a phenomenal experience. What could we use as criterion to know whether a patient has phenomenal experiences in those cases where she is unable to report?

Bodily reactions are a possible criterion to assert whether subjects are phenomenal conscious of a stimulus when they lost the ability to report. I have used this criterion in Belinda's case to suggest that phenomenal consciousness overflows cognitive accessibility. However, this criterion cannot work for those patients who have lost their capacity of voluntary movement. Consider this example: if we pinprick to patients who cannot talk or move voluntarily, how would we be able to know whether they had a phenomenal experience of the stimulus? Even

when a reflex action occurs right after a puncture, how can we know that the patients were phenomenal conscious of the stimulus? It seems that in the absence of report, the only way to know if the patients have a phenomenal experience would be through neurological scanning.

However, this method is not absent of problems. If we use neurological scanning to explore the brain areas in normal subjects who report to have pain experiences, we can appreciate which areas of the brain have been activated. If the same areas are not activated when we pinprick our patients, we should not rush and claim that they were not phenomenally conscious of their experience; since it is possible that our patients are phenomenally aware of the stimulus, without having cognitive access to it. In addition, there are brain activations that show nonconscious processes. As Vanhaudenhuyse et al. state: "Brain activations observed by using passive paradigms could reflect consciousness but they could also simply reflect nonconscious processing (see studies on subliminal priming or nonconscious processing during sleep and anesthesia)" (2007:529-530). Hence, unless we know which the neural correlates of phenomenal consciousness are, we cannot assure that patients who lost the ability to report are or are not phenomenally conscious of their experiences. Nevertheless, this task is extremely difficult to satisfy. Even if we can demonstrate Block's thesis, different kind of experiences could have different neural correlates of phenomenal consciousness. Hence, I argue that we must prevent and exercise caution in those cases where there is the slightest indication that subjects are phenomenally aware of their experiences. Thus, I argue that while we cannot demonstrate that Block's thesis is true or false; we should adopt Block's stance or epistemic correlationism in those exceptional cases to avoid the possibility of causing unnecessary harm to the patients.

Moreover, it seems that some creatures have phenomenal experiences despite that they lack cognitive abilities. I refer to those lower animals and human babies whose nervous systems do not attain complex cognitive operations. Do not human babies of less than one year old

have sensations? According to the HOT theory of consciousness, individuals are not phenomenally conscious of their experiences unless they have a high-order thought about their experiences. However, human babies do not have complex cognitive abilities to have conceptual thoughts (Rosenthal, 1986:350). Thus, those who want to support the HOT theory of consciousness are forced to deny that human babies are phenomenally conscious of their experiences, which would mean that they do not have sensations like pain. Rosenthal tries to solve this problem by asserting that human babies have primitive thoughts (Rosenthal, 1986:350).

Nevertheless, the nature of such primitive thoughts is obscure. What would be a non-conceptual thought? Some advocates of metaphysical correlationism think that this is an unsolvable problem for the HOT theory of consciousness. Thus, they suggest that phenomenal consciousness requires cognitive processes simpler than thoughts. Those who support AIR theories of consciousness claim that attention is that required cognitive process. Prinz refers to top-down endogenous attention when he tackles visual experiences, since he claims that attention effects occur when high-level visual areas send signal back into the intermediate level visual areas (Prinz, 2000:249). As Pinto et al. state (2013) bottom-up attention occurs during the feedforward state, while top-down attention takes place later in the visual process, in a neural feedback stage. Therefore, according to AIR theories of consciousness, human babies could not be phenomenally conscious of their sensory experiences, since it has been demonstrated that human babies have developed only bottom-up attention. As Gopnik states: "The parietal and sensory systems involved in exogenous attention are on line at an early age. The top-down frontal regions and connections that control endogenous attention only mature later" (2007:503).

Is it not possible that bottom-up attention is sufficient for consciousness in human babies? Those advocates of metaphysical correlationism who support that bottom-up attention is

sufficient for phenomenal consciousness do not have to deny that human babies could be phenomenally conscious of their sensory experiences. Although human babies cannot yield conceptual thoughts, they have cognitive access through bottom-up attention. Thus, according to Block's stance and this version of metaphysical correlationism, human babies could be aware of their sensations. Therefore, these two postures are coherent with how we deal with human babies. We do not hurt babies because we could damage their body, but for the reason that we think that babies could be phenomenally aware of their sensations.

The issue of phenomenal consciousness becomes more complicated when we analyse lower animals. It has been empirically demonstrated that some lower creatures such as fruit flies have bottom-up attentional capacity (Van Swinderen, 2007; Van Swinderen et al., 2009). Does it mean that fruits flies are conscious of their own mental states? Is their bottom-up attentional capacity sufficient for cognitive accessibility? Although different creatures share the same principles of neural processing and brain structure, it is possible that what is necessary and sufficient for one species is not for another. However, although I just focused on human beings to analyse phenomenal consciousness, we can infer possible conclusions concerning other animals. For instance, if it is possible that phenomenal consciousness could take place without cognitive accessibility in human beings with special conditions, why could it not be possible that some lower animals where there is a lack of cognitive access are phenomenal conscious of their sensory experiences? Therefore, I argue that given our lack of knowledge about the nature of phenomenal consciousness, we should exercise caution not only with human beings, but also with lower animals.

Conclusion

Throughout this dissertation, I explored whether cognitive access is a constitutive condition of phenomenal consciousness. For this, I tackled the question whether phenomenal consciousness overflows cognitive accessibility. Could it be possible that individuals are phenomenally aware of their experiences, without having cognitive access to these experiences? The debate was established between metaphysical correlationism and Block's stance. The former claims that cognitive accessibility is a constitutive condition of phenomenal consciousness. The latter claims that it is not a constitutive condition; it argues that phenomenal consciousness overflows cognitive accessibility, and we can demonstrate it empirically. Alternatively, I presented epistemic correlationism, a stance which remains distant to the debate, since it claims that although it is possible that phenomenology overflows cognitive accessibility, we cannot demonstrate it empirically. I have sympathized with Block's stance, my goal has been to analyse empirical cases in order to show that Block's thesis is true – phenomenal consciousness overflows cognitive accessibility.

For this, in the first section of the dissertation I introduced different attitudes which support metaphysical correlationism. The HOT, the HOR and the AIR theories of consciousness. I conclude that the AIR theories of consciousness seems to be the best attitude to support metaphysical correlationism, since it claims that high-order representations are not required for being aware of a sensory mental state. This attitude (also known as 'same-order' theory) could solve some issues presented to the other two attitudes concerning lower creatures and infallibility. On the other hand, I introduced the Block's stance, its advantages and difficulties. I argued that we cannot support a perfect theory absent of difficulties; therefore, I suggested (as Block's suggests) that we should use the method of inference to the best explanation to determine which stance is more plausible concerning the nature of phenomenal

consciousness (Block, 2007). After I presented such debate, I analysed three concepts – sensory mental state, working memory and attention – in order to prepare the ground for the discussion. I argued that sensory mental states required two types of properties: intentional and phenomenal. In turn, I suggested that a mental state does not have a phenomenal property if the subject is not phenomenally aware of such phenomenal property. Hence, sensory mental states require phenomenal consciousness. Moreover, I presented the difference between working memory and iconic memory. I suggested that iconic memory represents the visual phenomenal memory system, which has more capacity storage than the working memory system. Finally, I tackled the question whether attention is a constitutive condition of cognitive consciousness. The AIR theory of consciousness claims that it is a constitutive condition, while Block's stance suggests that it is not. At the end of the first section, I concluded that empirical evidence is required to know which stance is best suited to determine the nature of phenomenal consciousness.

In the second section, I explored different cases that Block suggests as empirical evidence to demonstrate that his thesis is true. Firstly, I analysed the change blindness phenomenon, which has been suggested by some advocates of metaphysical correlationism to claim that the content of visual experiences is sparse. I concluded that this phenomenon does not show that visual experiences are sparse, but rather that people might see objects without noticing the change. This approach suggested by Dretske is known as the inattentional inaccessibility view. However, this view does not demonstrate that phenomenology overflows cognitive accessibility. Secondly, I tackled the Sperling and Landman et al. experiments in order to know whether these experiments provide empirical evidence to corroborate Block's thesis, as he himself suggests. Nevertheless, I conclude that, although both experiments suggest that Block's thesis is plausible, none of them bring conclusive empirical evidence to assert that the thesis is true, since we can suggest that the information that allows the subjects to

discriminate stimuli in secondary tasks (as it happens in the spoon's case) was unconsciously processed. Finally, I analysed some psychological experiments carried out for patients with special brain conditions. I concluded that none of those psychological experiments that I have explored can demonstrate that Block's thesis is true. Nevertheless, I proposed a model of experiment by which it is possible to conclude that Block's thesis is true, as long as we get one of the expected outcomes. The experiment employs sensations (such as fear) as possible consequences of being phenomenally conscious of a stimulus without cognitive accessibility.

In the last section, I tackled the issue from other sensory experiences – auditory and tactile. I proposed different cases in which it seems that there is phenomenal consciousness without cognitive accessibility. I used the same argument in both types of sensory experiences (in tactile and auditory experiences). The argument is as follows: if subjects are aware of a change without having cognitive access to the stimulus that changes, they must be phenomenally conscious of the stimulus; since to be aware of a change, subjects must be conscious of the stimulus in some way. In addition, I invited psychologists to carry out experiments similar to everyday cases, since it is in these cases where it seems that phenomenal consciousness overflows cognitive accessibility due to a lack of attention. Finally, I concluded that Block's stance and epistemic correlationism are more coherent than metaphysical correlationism concerning our ethical practices. As we cannot conclude whether phenomenal consciousness overflows cognitive accessibility, we should exercise caution with those creatures that for some reasons there is a lack of cognitive access, since they could be phenomenally aware of sensations such as pain, even though they do not have cognitive access to that experience. In addition, the value of lower animals must be reconsidered, since it is possible that they enjoy a rich mental life despite the lack of cognitive abilities.

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